

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
29 August 2002 (29.08.2002)

PCT

(10) International Publication Number  
**WO 02/065860 A1**

- (51) International Patent Classification<sup>7</sup>: A23L 1/314, 1/31, 1/30, 1/315, 1/317
- (74) Agent: TSIRIMONAKIS, Matthew; 53 Stourmari Str., GR-104 32 Athens (GR).
- (21) International Application Number: PCT/GR01/00025
- (81) Designated States (*national*): AL, AM, AT, AZ, BA, BG, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HR, HU, IL, IS, JP, KG, KZ, LT, LU, LV, MD, MK, NO, PL, PT, RO, RU, SE, SI, SK, TJ, TM, TR, UA, US, UZ, YU.
- (22) International Filing Date: 29 May 2001 (29.05.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (84) Designated States (*regional*): Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).
- (30) Priority Data:  
20010100089 19 February 2001 (19.02.2001) GR
- (71) Applicant (*for all designated States except US*): "CRETA FARM ANONIMOS VIOMICHANIKI & EMPORIKI ETAIREIA" [GR/GR]; Prinos (Latzimas locality), Municipality of Arkadi, GR-741 00 Rethymnon (GR).
- Declaration under Rule 4.17:  
— of inventorship (Rule 4.17(iv)) for US only
- Published:  
— with international search report
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): DOMAZAKIS, Emmanouil [GR/GR]; 5 Moatsou Str., GR-741 00 Rethymnon (GR).
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD OF PRODUCTION OF A MEAT PRODUCT CONTAINING OLIVE OIL

(57) Abstract: Method of production of goods based on meat (products of cooked pork meats - sausages - salamis of contracted meat) with direct embodiment of olive oil and maximum possible substitution of animal fat, which includes the following stages: a) Mixture of thin meat with H<sub>2</sub>O, salt, poli - phosphoric salts, preservatives, vegetable proteins, milk proteins and starch. b) Insertion of olive oil and continuation of mixture. c) The mixture is encased with simultaneous application of vacuum and pasteurization. d) Freeze of product. Products based on meat with embodiment of olive oil, which are produced according to this method have an excellent stability as far structure is concerned (compactness) and the scenic-chemical features of olive oil which these products contain remain unchangeable.

WO 02/065860 A1

## DESCRIPTION

## METHOD OF PRODUCTION OF A MEAT PRODUCT CONTAINING OLIVE OIL

The present invention involves the production of goods based on meat with the main features:

1. use of olive oil instead of the usual practical addition of animal fat (fatty tissue)
2. use of thin bonny muscular tissue (meat)
- 5 3. addition of special subsidiary material
4. help of appropriate technological procedures and process that are developed aiming at:
  - obtainment of solid emulsion – meat-paste of firm structure, apt to  
10 undergo any suitable caloric process, with further target the  
embodiment and firm connection of olive oil and after the coagulation  
of the proteins in the main system of the emulsion that consists of  
proteins / water / olive oil.
  - the obtainment of the maximum possible maintenance of organic-  
15 receptive, scenic-chemical and nutrient features of the differentiation  
determinant **Olive Oil**.

The cooked pork meats of contracted meat constitute a structural «emulsion» with the participation of essential ingredients of the proteins of the meat, water (of the meat +  
20 additional water) and additional fat (pork fatty tissue).

The stability of the «emulsion» depends mainly, among others, on the connective ability of used meat to retain water and to digest the additional fat.

25 Especially the muscular proteins and the salt-solvents (actinia, myosin and actomyosin) that represent the main part of (approximately 60%) of the muscular occiputs, contribute to the stability of the «emulsion», as in their hydrated condition function as a protective frame of the embodied fat, which is the non-continuing phase of the emulsion and the main factor of their non-stabilization.

30 The obtainment of stabilized embodiment of the fat (fat-orbs) in the «emulsion» constitutes a technological target of this invention that is faced with known combined techniques, which affect positively to this direction and include the adjustment of the parameters, such as the specific selection of meat, the regulation of PH of the meat,  
35 the quantity of additional salt, the use of subsidiary technology, the conditions of process – creation of meat-paste –, the timetable of caloric process and freezing of the final product, etc.

40 Nevertheless, the embodiment of olive oil in comparison with the classic addition of pork fat, as long as it is tested with classic techniques, runs into difficulties of instability or created non-stabilized tendencies, not only of the emulsion of meat-paste but also of the final products that usually shows the appearance of «de-oil».

Consolidated well-known techniques of indirect embodiment of vegetable fats are known, that:

- include a procedure of preliminary caloric process of olive oil in levels of 100° C twice.
- 5 Especially in case of olive oil whose role in nutrition of humans is distinctive among seed-oils and other vegetable fats and also internationally renowned for its beneficial features of its vegetable ingredients (reference to Omega fat acids and their protective role, low cholesterol, toko-phenols and poli-phenols and their role),
- 10 Therefore, it is thought to be essential,

On one hand the, its participation as an ingredient of substitution of animal fat in cooked pork meats (products of caloric process of contracted meat) to be achieved under especially protective conditions, so that the maximum possible transfer of its

15 characteristics on the hosting product could be secured.

On the other hand, with the process of embodiment to ensure the traditional technique of producing cooked pork meats, and scientific facts will systematically be taken into consideration based on the characteristics of proteins, fats and oils as well as the

20 potential of their in-between connection depended on these characteristics.

The fact that the stability of «emulsion meat» is affected by the following facts, must be taken into account:

- 25 • the source and the composition of the embodied fat
  - its scenic-chemical characteristics, such as:
    - the profile of fat acids (kind and degree of satiation)
    - the SFI (Solid Fat Index)
    - the relation of PUFA, MUFA / SUFA in the applicable
- 30 temperatures in the different stages of production

It is obvious that from technological aspect the differences between porc fat and olive oil should be taken into consideration when creating a stable emulsion.

35 In the critical temperatures of production (0 – 4° C) up to 71 ° C) but also in the temperatures of freezing (after caloric process) in addition to the later maintenance (3 – 7° C) of the product, it's SFI that has a very significant role.

In the case of olive oil its characteristics presuppose embodiment under specific conditions, that consist in:

- 40
- the creation of the maximum possible embodiment of oil with mechanical process (mixture, similitude of the participated ingredients).
  - the estimation of the ideal quantitative relation between these ingredients so that the maximum possible soaking and maintenance of oil in the emulsion at the same
- 45 time with the maximum possible absorbance of additional water (relation fat / proteins, water of proteins).
- the creation of a stable «waterproof» protein complex round the fat-orbs, without the application of high temperatures for the transformation of the proteins, with the

application of mechanical process under selected conditions with the application of vacuum and temperature in the phase of mixture and degree of assimilation – with the maximum possible spreading and size of fat-orbs.

- 5 In the end, one significant aim is the insurance of a stable behaviour of the emulsion meat-paste in the phases of caloric process, the later freezing of the product, the behavior of the product in a possible cutting and packing in vacuum and during the maintenance in conditions of freezing.
- 10 The aim of the present invention is the production of goods based on meat of caloric process (products of cooked pork meat – sausages – salamis of contracted meat):
- with direct in frost embodiment of olive oil and maximum possible substitution of animal fat
  - with the addition of combined subsidiary technology and
  - 15 • the application of special technological process

This aim is achieved with the mixture of meat of low fat-content in frost with olive oil in combination with the use of vegetable proteins, milk proteins, poli-phosphoric salts, water and salt.

20

In this way, the present invention offers pork meats with olive oil and a method for their production with in frost mixture of olive oil, non-fat meat and water.

- Thin-chopped non-fat meat of temperature 0° C is mixed with H<sub>2</sub>O of temperature
- 25 –2° C in a machine of mixture with simultaneous addition of salt. Next, we insert poli-phosphoric salts, preservatives and spices. After all these are mixed we add gradually the vegetable proteins, the proteins of milk and starch. When the temperature of the mixture is 2° C we insert the olive oil. The mixture continues with simultaneous application of vacuum 960 mBAR for 3 min, aiming to deduct the closed in the
- 30 mixture oxygen in order to avoid oxidation. The mixture continues until the temperature is 4° C. The entire time of mixture is 15 min. And the absorbing power 26 KW. The mixture then goes to a filling machine where it is encased with simultaneous application of vacuum 1000 mBAR with absorbing power 7 KW and later on, it is pasteurized in 71° C. The entire time of caloric process depends on the diameter of the
- 35 product and ranges from 1 to 3 hours. After the pasteurization, the product is frozen in freezing chambers with temperature of – 2° C up to 2° C.

- The pork meats with olive oil that are produced according to this invention, have an excellent stability as far structure is concerned (compactness) due to the use of thin
- 40 meat, application of low temperatures and their production in vacuum. The scenic-chemical features of olive oil, which these products consist, remain unchangeable, because of the low temperatures, which are enforced during the productive procedure.

## CLAIMS

**Method of production of goods based on meat with direct embodiment of olive oil and maximum possible substitution of animal fat.**

1. Method of production of goods based on meat which is distinguished by the embodiment of olive oil in substitution of animal fat, instead of the traditional use of animal fat or the use of emulsion which consist of vegetable fat, water and milk proteins prepared in temperatures over 100 C° (in heat)
- 5 This method includes the following stages :
  - (a) Thin meat of temperature 0 C° is mixed with H2O of temperature -2 C°, salt, poli - phosphoric salts, preservatives, vegetable proteins, milk proteins and starch.
  - (b) Then, we insert the olive oil and continue the mixture with simultaneous application of vacuum for 3 min. The mixture stops when the temperature is 4 C° .
  - 10 (c) Then the mixture goes to filling machines where it is encased with simultaneous application of vacuum 1000 mBAR and later on it is pasteurized in 71 C° .
  - (d) After the pasteurization, the product freezes in freezing chambers up to 2 C° .
2. The whole time of the caloric process which is above mentioned ( claim 1 )  
15 depends on the diameter of the final product and ranges from 1 to 3 hours.
3. The products based on meat, with embodiment of olive oil, which are produced according to the methods of claims (1) and (2).

## INTERNATIONAL SEARCH REPORT

onal Application No

GR 01/00025

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A23L1/314 A23L1/31 A23L1/30 A23L1/315 A23L1/317

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A23L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, FSTA

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 238 701 A (DUBANCHET ANDRE) 24 August 1993 (1993-08-24) column 2, line 13 - line 49; claims 1,2,5 ---	1-3
A	VAN DEN HOVEN ET AL: "Functionality of dairy ingredients in meat products" FOOD TECHNOLOGY, US, INSTITUTE OF FOOD TECHNOLOGISTS. CHICAGO, vol. 41, no. 10, 1 October 1987 (1987-10-01), pages 72-73, 76-77, 103, XP002081220 ISSN: 0015-6639 the whole document -----	1-3



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*A\* document member of the same patent family

Date of the actual completion of the international search

30 July 2001

Date of mailing of the international search report

07/08/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Vernier, F

### Information on patent family members

rci/GR 01/00025

Form PCT/ISA/210 (patent family annex) (July 1992)